COST AND MANAGEMENT

PERIODICAL
JAN 2 1957
MICHIGAN STATE UNIVERSITY
LIBRARY

PROFIT

The Accountant's Role in a Development Programme . . .

By W. Joseph Blood

Good Supervision and How To Get It . . .

By S. D. Flinn

Depletion Accounting for Oil and Gas Producers . . .

By R. B. Vaughters

LOSS

Official Journal of

The Society of Industrial and Cost Accountants of Canada

Dec. 1956

Our day-to-day role is that of:—

—aiding administrators in solving specific management problems,

—devising and giving effect to better management methods, and

—providing such other advice and help as may enable busy executives to get quicker and better results than would otherwise be possible.

The general field in which we serve may be indicated by some of the areas of our activity listed below.

- BUDGETARY CONTROL AND STANDARD COSTS
- SIMPLIFIED COSTING
- INVENTORY CONTROL
- ORGANIZATION FUNCTIONS
- SALARY EVALUATION
- PAPER WORK SIMPLIFICATION
- PRODUCTION CONTROL

- MARKETING COSTS
- CONTROL OF SALES
- INCENTIVE PLANS
- WORK SIMPLIFICATION AND METHODS
- PLANT AND OFFICE LAYOUT
- TIME AND MOTION STUDY
- OVERALL MANAGEMENT AUDIT

J. EDGAR DION

CONSULTING MANAGEMENT ENGINEERS

4643 SHERBROOKE ST. WEST — MONTREAL 6, CANADA

GLENVIEW 1428

We would be glad to discuss how we may assist you—no obligation naturally.

Cost and Management

VOL. XXX DECEMBER No. 11

THE ACCOUNTANT'S ROLE IN A DEVELOPMENT PROGRAMME
By W. Joseph Blood 409

A graduate in economics of the Wharton School, University of Pennsylvania, Mr. Blood joined Corning Glass Works in 1946 as a supervisor in the General Accounting Department in Corning. He is currently Administrative Assistant to the Director of Engineering of the Corning Works but has served as Plant Accountant of the Muskogee, Oklahoma and Harrodsburg, Kentucky Works. He is a member of the Elmira Area Chapter of the National Association of Cost Accountants.

GOOD SUPERVISION AND HOW TO GET IT
By S. D. Flinn 418

Mr. Flinn is Comptroller of United States Steel Supply Division of United States Steel Corporation. Earlier he served in the General Offices of the Corporation as Assistant General Works Auditor, Procedure Supervisor, and Organization Planning Supervisor. After his graduation from the University of Pittsburgh, he spent ten years in the public accounting field and several years with the Union Switch and Signal Company as Chief Factory Accountant. Mr. Flinn is President of the Chicago Chapter of the National Association of Cost Accountants.

DEPLETION ACCOUNTING FOR OIL AND GAS PRODUCERS
By R. B. Vaughters 428

A Texas C.P.A., Mr. Vaughters is manager of the Houston office of Price, Waterhouse & Co., which firm he joined shortly after graduation from the University of Arkansas in 1937. He has had wide accounting experience principally in the oil business and related industries. He is a member of the American Institute of Accountants, the National Association of Cost Accountants and the American Accounting Association.

TOPICAL INDEX TO COST AND MANAGEMENT
Volume XXX 439

REGULAR DEPARTMENTS

C. & M. ROUND-UP 403
BOOKS IN REVIEW 407
STUDENT SECTION 435

Published Monthly by the
SOCIETY OF INDUSTRIAL AND COST ACCOUNTANTS OF CANADA
Incorporated 1920
Editorial and Business Offices: 31 Walnut Street South, Hamilton, Ontario
J. N. Allan, R.I.A., Secretary-Manager and Editor

Subscription price to non-members, $5.00 per year. Single copies, 50 cents.
Members desiring five copies or more of a single issue, may obtain them at 25 cents.
Opinions expressed by articles and comment are not necessarily endorsed by the Society of Industrial and Cost Accountants.
Authorized as second class mail, Post Office Department, Ottawa.

Christmas Message

Christmas 1956 brings to a close a troubled year climaxed by a series of grave international events. The way ahead will doubtless be fraught with perils which none of us can afford to ignore.

Many years ago the civilized world faced a similar threat: chaos and disintergation. Of this compulsion was born a new age, the Christian Era, whose light of unity, love and fellowship fostered the seeds of democracy.

We in Canada are ably fitted by our heritage and opportunities to lead a renaissance of Christian good will and understanding based on a premise of prosperity and equality for all. The future is bright. Our rich land awaits fulfilment. Our ideals await a strong voice for their dissemination.

Our Society has an important role to play in this development. In the vanguard of industry as we are, it is in our power to ensure the greatest productivity from our resources, the greatest economic good for all, without which there can be no harmony of purpose, no milieu for the intellect or the growth of high principles.

Our success lies in the hands of each of our members. The pebbles of progress drop singly in the dark waters, parting them in ever-widening ripples to all men's shores. Our Society has grown and flourished in the past years and with the aid and support of our membership should continue to do so in the year ahead.

As the chimes of Christmas envelop the land and each hearth is bright with Yuletide greenery, your Officers and Directors join me in heartily extending all best wishes of the season for

A Merry Christmas
and
A Happy and Prosperous New Year

M. Hugh Bacon

PRESIDENT.

C. & M. Round-Up . . .

By N. R. Barfoot

LOOKING AHEAD

50 million on new hotels will be spent in the next couple of years. This is the second 50 million spent in the last few years. Some 8,900 new rooms are provided, mainly in Montreal, Toronto, Calgary, Edmonton and Vancouver.

—o—o—

No doubt about it, the annual rate of the G.N.P. will be 29 billion dollars for this year: Up 11% from last year. In addition we spent 7½ billion on imported goods and services.

—o—o—

We have one billion dollars invested in enterprise outside Canada. At our present rate of expansion, we should double this figure in a short while. Less than ten years ago, this was a mere 500 million.

—o—o—

In 25 years newsprint production in Canada will have jumped from 6.2 million tons to 12.4. Our present home consumption will rise from 450,000 tons at present to 950,000 tons. The difference of course is exported mainly to the United States, present overseas shipments from Canada are 750,000 tons. This is expected to be 3.8 million tons in 25 years.

—o—o—

Petroleum reserves will jump if research on extraction of oil from shale proves out. Present proven reserve is 3.5 billion barrels.

—o—o—

The Gordon Report will make interesting reading—Although the report which will be presented by year end has been kept a secret, some conjectures as to its findings may be made. For example, the so called foreign investment problem will undoubtedly be dealt with. Another significant area of discussion will be the relative importance of primary and secondary industry. The hewers of wood and drawers of water concept will probably be scotched for all time. The problem of the have and have-not sections of Canada will deserve considerable attention. The Federal Government will most likely be guided in its future policies by the findings of the Commission.

—o—o—

SICKNESS IN CANADA

Enumerators for the Canadian Sickness Survey have turned up the following points:

Eight of every ten Canadians get sick at least once a year, six stay at home and five go to bed.

The average person is sick once a week or fifty-one days of the year. He is twelve days away from work, including five and one half spent in bed at home or in hospital.

Over one million Canadians have some form of permanent physical disability. 423,000 are severely or totally disabled.

The six worst cripplers are: Heart—126,000; Accidents—121,000; Rheumatism—115,000; Deafness—73,000; Blindness—67,000; Chronic Nervous Troubles—57,000.

Tuberculosis, Asthma, Polio, Diabetes, Ulcers, Cancer have also impaired another 339,000 Canadians.

Health care statistics reveal that 46.9% of us have no health care—43% see a doctor—10.2% go to a hospital—3.7% have operations—14.7% see a dentist—3.3% have eyes tested.

The total cost of health is 263 million for hospitals and 173 million to doctors.

Only 36% of the hospital bills are paid directly by patients. Health plans, private and public—Workmen's Compensations and charitable grants pay the balance.

61% of the cost of doctors is paid directly to them by patients and the balance by various Health Insurance Plans.

Out-of-pocket expenses for the average family across Canada per year equals $82.10. This is broken down as follows—Insurance—$19.50; Doctors—$19.20; Medicine—$16.00; Hospitals—$10.20; Dentists—$7.20; Nurses—$2.60; Miscellaneous—$7.40.

Average cost per annum per family however, varies by regions—British Columbia—$100.00; The Prairies—$77.00; Ontario—$83.00; Quebec—$86.00; Maritimes—$72.00; Newfoundland—$28.00.

—o—o—

ALUMINUM

Do you know where Canada stands in the world of aluminum production and use? Here are a few interesting figures:

Production in Tons	1955	1960
Canada	608,000	1,112,000
United States	1,566,000	2,431,500
Rest of the world	671,000	1,112,000
Total	2,845,000	4,655,500

In 1905 world production was 15,400 tons and Canadian output stood at 1,200 tons or 8% of the world total. Canadian production has been as high as 28% of the world total and now stands at 21%, and is expected to rise to 24% in 1960.

—o—o—

EMPLOYEE STOCK PURCHASE PLAN

Do you have an Employee Stock Purchase Plan in your company?

More and more Canadian companies are making provision for such plans. It is claimed that the advantages are—

Greater employee interest, thus greater efficiency. As part owners, employees have a direct interest in their company's welfare.

Better employee morale by recognition of the importance of the worker.

The plans usually have the following points:

(a) Available after a year's continuous employment
(b) Price of stock—usually 10-15% less than market
(c) Stock available generally through payroll deduction on the installment basis

(d) Some companies put up money towards the stock purchase in addition to the employee contribution

(e) Purchases per annum are usually not more than 10% of salary or wages by company rule.

—o—o—

ON THE PERSONAL SIDE

Tinted Lighting may be the rage this winter. Manufacturers have bulbs casting yellow, aqua, blue, green and gold light, that are available in 60, 75, 100 and 150 watt sizes.

—o—o—

Paper Clothing—In the making are paper dresses, shirts, socks, jackets, uniforms, sport shirts and bathing suits. Producers say they are soft, wearable and nicely designed. Relatively inexpensive, they can be discarded after a few wearings.

—o—o—

Quantity Discounts on Life Insurance are the trend. More and more companies are offering special five and ten thousand dollar policies or more that have lower rates per thousand than the smaller policies.

—o—o—

Higher Pay? A married man earning $5,000 per annum in 1938 paid $144 Income Tax and took home $4,784. To have the same amount in purchasing power today he needs to earn $11,000. Tax today is $1,837 and loss through inflation is $4,367.

—o—o—

Cheaper Air Fares to the Continent will come through Charter Flights next year. May be as low as $198.00 per person return—Montreal to London.

—o—o—

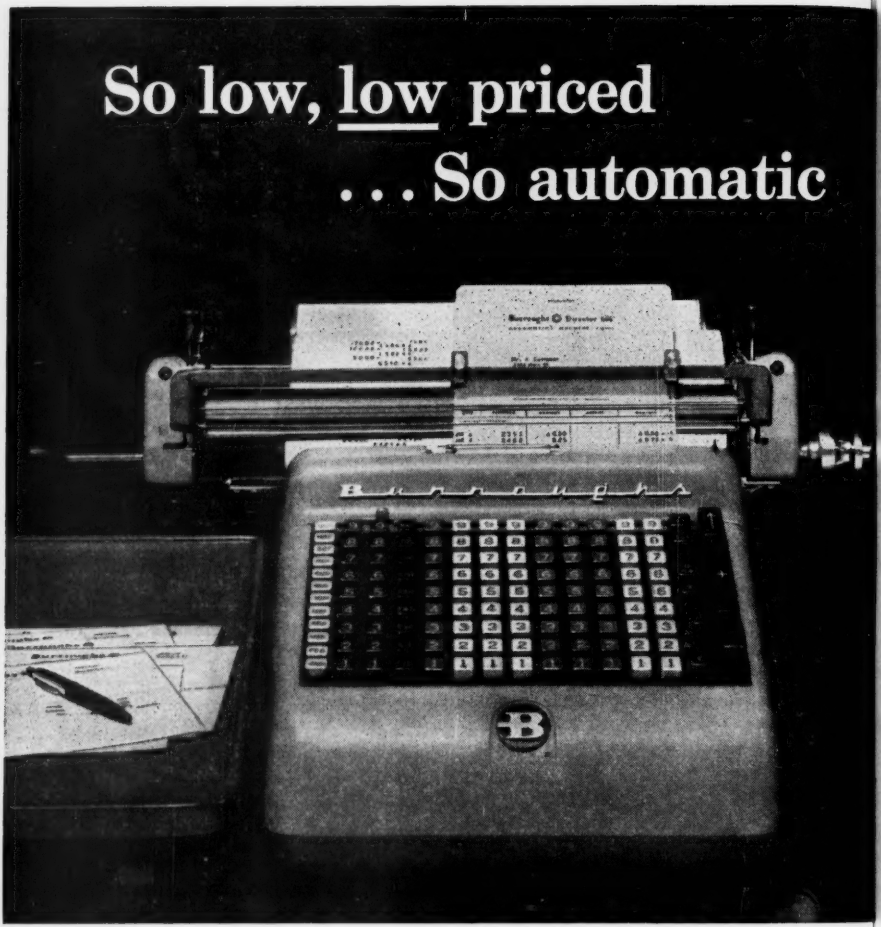
Movie Credit Cards may be introduced soon. The system now on trial in the United States is similar to that operated by the oil companies.

—o—o—

When you retire—don't stop work, is the advice of psychologists. A change of work at a reduced pace is beneficial. A complete stop is dangerous to health and happiness.

PAYNE, PATTON & PUGSLEY
CHARTERED ACCOUNTANTS
Gordon S. J. Payne, C.A. Donald R. Patton, C.A.
Philip T. R. Pugsley, C.A.
Suite 14, The Linton,
1509 Sherbrooke St. West Montreal, Que.

So low, low priced ... So automatic



So right for small business accounting

Yes, when you couple the low, *low* price of the Burroughs Director Accounting Machine with its very special "big machine" speed features, you'll agree it is just the ticket for small and medium-sized businesses. There's fast front feed, short-cut keyboard, automatic carriage tabulation . . . *and that's only the beginning!*

For the full story and a complete demonstration why not call our nearby branch office. You'll see how to make *your* step up to automatic accounting as economical as it is practical! Burroughs Adding Machine of Canada, Limited. Factory at Windsor, Ontario.

Burroughs

Burroughs Director

ACCOUNTING MACHI

"Burroughs" is a trade

Books in Review . . .

INDUSTRIAL WAGE AND SALARY CONTROL

By Robert W. Gilmour, John Wiley & Sons, Inc., New York, 1956.

Reviewed by GEORGE H. MILNE, B. Com., B. Eng., L.A.

With starting salaries going up much more rapidly than the general wage average it would appear that now is the most opportune time to embark on a programme of salary administration. For people who are not completely conversant with the mechanics of such a programme, Robert W. Gilmour's book, "Industrial Wage & Salary Control" is a good basis for familiarity with the techniques. It should be especially noted that this book is not a development of the various techniques of wage control. Rather it is detailed discussion of the application of the point method of job evaluation. An extensive argument in the earlier stages of the book explain why this system is considered the most logical, and hence the one adopted.

The text is very definitely aimed at hourly rated jobs. In many cases mere reference is made to procedures which could be followed for salaried and clerical jobs. Although the ideas developed are definitely applicable, specific techniques are sketchy in this area.

Consideration is given to union understanding which is an intrical part of any system which affects unionized employees.

An interesting feature of the book is the many specific examples which are provided. Numerous illustrations and graphs are clearly explained to good advantage. The book includes a useful three-page bibliography.

There is no better summing up of the contents than to quote from the description on the dust cover.

"A practical presentation of the development, installation, and administration of point evaluation plans as the basis for sound wage and salary controls."

BUSINESS FORECASTING IN PRACTICE

Edited by Rudolph G. Abramson and Russell H. Mack, John Wiley & Sons, Inc., New York, 1956, *pp.* 275. $6.50.

Reviewed by C. W. RAY, R.I.A.

Mr. Abramson's contribution to this book is on "Business Cycle Theories" while Mr. Mack outlines the "Techniques of Forecasting". The editors are to be congratulated in obtaining business forecasts that were prepared by six outstanding economists.

The subject of forecasting is preceded in this book by an outline of possible causes for business cycles. There are eight theories described, followed by ways in which the key element of each theory might be measured for purposes of forecasting. Although the authors

agree that business forecasting is an art rather than a science, they believe a forecaster should understand the theory or theories that are being applied in preparing each forecast. The authors maintain the techniques of forecasting require the use of key elements of the one or more theories applicable. At this point, the gathering and selection of the necessary information is required to project the business cycle or cycles into the future.

Following the outline on the theory of business cycles and techniques of forecasting is the presentation of six short-term forecasts. These forecasts were prepared by men responsible for general business analyses in their firms in which manufacturing, trade and finance are represented. These six forecasts show the source of the information used and why, how it was used and the conclusions reached.

For the newcomer to business forecasting this book certainly outlines theory and application of business cycles to this important phase of management. For the practising forecaster this book should be a welcome addition to his library. The reason—forecasting is an art,

The Mechanical Development Work Programme has far-reaching not a science, and therefore as one learns of other approaches to a problem the result should be for more accurate forecasts in the future.

A comprehensive listing of other publications is shown and also a five page detailed index of the contents of the book.

DYNAMIC FACTORS IN INDUSTRIAL PRODUCTIVITY

By Seymour Melman, John Wiley & Sons, Inc., New York, 1956. $4.75.

Reviewed by L. R. BENNETT, R.I.A.

The author develops the hypotheses that the adoption of machinery and improved production methods by industry is generally defensive, to compensate for increases in labour costs, that increased productivity is an effect of, rather than a prime incentive for technological improvements, and that the extention of the administrative, or non-productive departments of industrial organizations is not related to their increased productivity.

These theories have arisen from studies of the post-war revolution in production methods in British Industry. The inference drawn is that British industrial output lags behind American due to the lower ratio of labour cost to the cost of machine operations in Britain, as compared with the same ratio in the U.S.A. (It is pertinent to note here that four years were taken to complete the book, and that the statistics used are for years prior to 1951.)

The Accountant's Role in a Development Programme . . .

By W. Joseph Blood
Administrative Assistant to the Director of Engineering, Corning Glass Works, Corning, New York.

The industrial accountant finds a vital role to play in the formation of an internal mechanical development programme, through expenditures planning and expenditures control and review. By bringing a broad perspective to the project, he can be of invaluable assistance in furthering a programme that has a serious long-range impact.

IN THE effective execution of an internal investment programme there is much opportunity for application of a cost accounting background. In a company in which a large engineering force is a vital cog in this programme, the accountant finds a dual role in the economic evaluation of the programme itself and in the surveillance of that programme to promote optimum use of scarce engineering talent. The point of departure in this discussion is a Mechanical Development Department responsible for the design and development of new and improved production machinery. The accountant's opportunities and contributions in this area are indicated in two broad categories:

(1) Expenditures Planning

(2) Expenditures Control and Review

Rather than detailing complete procedures the discussion points out the importance to engineering management of the accountant and of typical accounting tools used in those two areas. Particular emphasis is placed on the planning phase.

Expenditures Planning

Planning of expenditures in the Mechanical Development Department involves three major tasks:

(1) Establishing a Work Programme or outline of operations for the ensuing year. It is used as a tool for gaining management approval of the approximate funds required and for departmental planning purposes. It also serves as the base from which a detailed budget can be prepared.

(2) Preparing a detailed budget for departmental control purposes.

(3) Preparing Appropriation Requests to gain final management review and approval before work is started on each project.

The Work Programme

implications since it deals with the basic framework of technology within which the company will operate. In fact the very existence of such a development group is usually due to the company's need for continuing improvement of custom machinery which cannot be obtained commercially. But while the programme must reflect a large

element of vision technically, it also must be subject to incisive economic analysis if the company's financial position is to be strengthened. Areas of work to be incorporated in the annual programme should represent real needs of the company; however, definition and determination of needs can be a very elusive task and it is in this connection that the accountant makes his first, and perhaps most significant, contribution to the Mechanical Development group.

The first step in evolving the annual Work Programme requires that the development group get from each source an outline of needs for the ensuing year. Sources of this information normally would be manufacturing departments or product development groups. Top management may express certain strategic needs to combat competitive situations and the Mechanical Development Department itself may also take the initiative in advancing proposals. In any event the stated needs will normally be quite numerous and require collection in a formal manner. The form of a typical manufacturing unit's proposed programme is shown in Exhibit I.

PLANT X
PROPOSED MECHANICAL DEVELOPMENT PROGRAMME
1957

Machine Required	Reason for Request	Estimated Annual Gain	Source of Gain
1. Improved type of Press	Poor contour, slow speed	$80,000	10% better selection 25% higher speed
2. New finishing machine for Product A	Non-competitive quality level	15,000	Profit on additional volume
3. Automatic inspection device for No. 68 Production Line	High labour cost	60,000	Fewer inspectors

EXHIBIT I

(Calculation of the estimated gain as shown in Exhibit I requires that the accountant for the requesting group have a thorough knowledge of the operations concerned. He must be intimately familiar with cost and profit behaviour and his operating budgets and other records must readily yield the type of information required. Failures in this area can lead to serious disappointment when a completed project is evaluated.)

The sum of all such proposals submitted to Mechanical Development usually will far exceed both the group's ability to produce and the supply of funds available for the activity. While this is a healthy situation, it requires a considerable amount of sifting and sorting before a final programme can be established. Here managerial acumen must be supplemented by economic evaluation.

Thus a natural second step in the programming process is the segregation of proposals requiring financial justification from those on which gain is not measurable. For those based on dollar benefits,

costs and economic lives must be estimated, followed by calculations of rate of return and payback periods.

Proposals not justifiable on measured financial gain are assigned estimated costs, reviewed by pertinent management people and interspersed in the ladder of return on a judgment basis. Also added to the programme would be the projects carried over from the old year and on which work was to be continued. The programme at this point would appear in form similar to that shown in Exhibit II. It would Upon determination by top management of total funds available, the then be subject to further review to adjust priorities for risk factors. proper cutoff point on the programme list would be set and the total budget allowance for the year established.

It is well to note in this programming job that payback period and rates of return are not minutely calculated but estimated on short-cut arithmetic or approximated from visual inspection. This usually must be done due to time limitations. It also must be realized that such a programme requires thorough review in its technical aspects; and finally, if the job is to be done well and in a relatively short period of time, it must be expertly organized. The accountant spearheading programme preparation obviously is in a broad, challenging area of activity.

The Budget

With the Work Programme indicating what is to be done we then embark on preparation of the detailed departmental budget which necessarily raises the question of how the work is to be accomplished. Here again the accountant projects himself into the area of management planning.

This thought perhaps can be best illustrated with the major cost category of salaries and wages. The answers to "how many people" and "how much money" require that we first determine the number of productive man-hours available. This can be done by taking possible hours for people on the payroll and adjusting that total by an experience factor for nonproductive time. (See Expenditure Control and Review.) A comparison of the resulting productive hours with the requirements per the work programme indicates the surplus or, usually, the shortage of available hours. At this point some planning must get under way. Will the existing work be farmed to outside design firms? Will additional people be hired? Or will both be done in some combination? If the work is farmed, to what extent do we create an administrative problem for ourselves? If additional people are to be hired, a recruiting plan will have to be organized and executed. These few statements are a simplification of the problem but indicate the type of thinking that must be done. Only after such decisions are forthcoming can the labour budget be prepared. (See Exhibit III and IV.)

MECHANICAL DEVELOPMENT DEPARTMENT

PRELIMINARY PROGRAMME

1957

Program (a)	Plant	Estimated Cost—1957 Eng'g. Hrs.	Dev. Exp.	Capital	Total Programme (b) Dev. Exp.	Capital	Return Rate	Payback Period
1. Incomplete Projects 1956	Various	6,000	$ 70,000	$ 150,000	$ 70,000	$ 150,000	——	——
2. Automatic Inspection Device	X	1,000	10,000	20,000	10,000	20,000	100	0.5
3. Safety Mechanism Press No. 12	Z	200	2,000	2,000	2,000	2,000	——	——
4. Complete Production Line—New Product 821	P	10,000	120,000	250,000	150,000	270,000	52	1.2
Totals		400,000	$4,100,000	$8,000,000	$ 6,000,000	$11,900,000	——	——

(a) See detail description attached. (b) 1957 and beyond.

EXHIBIT II

MECHANICAL DEVELOPMENT DEPARTMENT

1957 LABOUR BUDGET

Employee	Position	Annual Salary
1. John Brown	Chief Designer	XXX
2. E. J. Black	Designer — Class A	XXX
Provision for Merit Increases		XXX
Total — Currently Employed		$400,000

EXHIBIT III

MECHANICAL DEVELOPMENT DEPARTMENT

1957 LABOUR BUDGET

Position Title	No.	Date to be Filled	1957 Cost
Planned Additions:			
Designer—Class A	2	March, 1957	XXX
Designer—Class B	1	March, 1957	XXX
Designer—Class B	2	July, 1957	XXX
Total Planned Additions			$ 30,000
Total—Currently Employed			400,000
Total Budget—Account 15			$430,000

EXHIBIT IV

It can be seen from this example that through the medium of budget preparation the accountant raises planning questions to which answers must be found if the department's work is to be accomplished in an effective manner.

Appropriation Requests

With the budget and Work Programme we establish a broad expenditures plan for the year. However, since the economics presented in the work programme are quite sketchy, it is necessary that a more detailed study be made of each project before work is actually started. Further, an appropriation request must be prepared for final management review and approval of the project. In the preparation of these requests the accountant has a two-fold opportunity to sell himself as an individual and to gain valuable experience in contact with the detailed economics of problems company-wide. He also has a contribution to make in his ability to organize and separate facts from opinions; his thoroughness and his ingenuity at presenting the economics of alternate plans.

Expenditures Control and Review

In the realm of dollar controls the accountant for the development group must provide timely control reports which will aid in effective execution of the total programme. An outline of three important tools will exhibit his value in this area.

Engineering Hours Analysis

Perhaps his most effective control report strangely enough does not contain a single dollar figure. This report shown in Exhibits V,

VI, VII and VIII is called the Weekly Engineering Hours Analysis and is prepared basically from the labour distribution records. Exhibit V shows the section of the report dealing with the distribution of engineering effort by project. This data often signals the need for management action; for example, a review of the actual project hours will give a quick insight into relative effort applied to each project and adjustments can be made to meet short-range changes in programme emphasis. Similarly a comparison of actual hours with backlog hours may dictate changes in manpower distribution to meet important deadlines.

MECHANICAL DEVELOPMENT DEPARTMENT
WEEKLY ENGINEERING HOURS ANALYSIS
SECTION I—DISTRIBUTON TO PROJECTS

Project	Hours Applied	Backlog Hours
1. New Finishing Machine Type Z	110	600
2. Dead Head Cutting Unit	36	78

EXHIBIT V

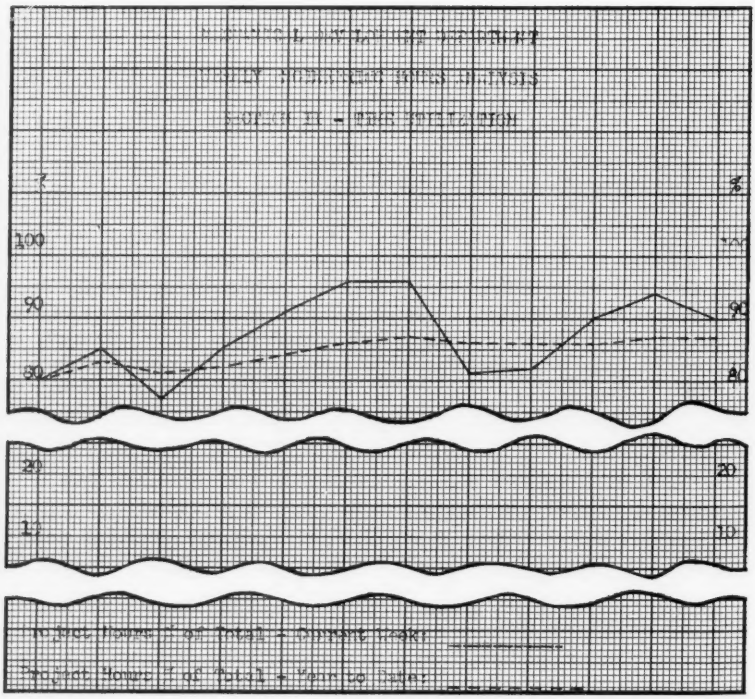


EXHIBIT VI

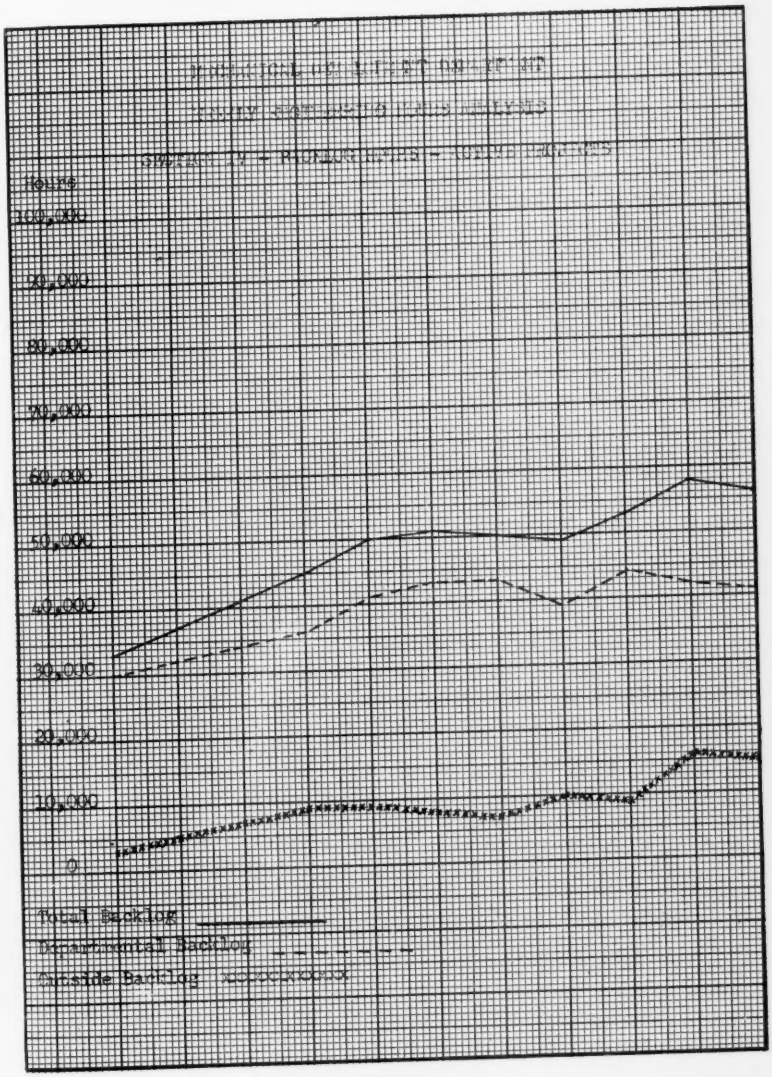

Hours
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
Total Backlog
Incremental Backlog
Upside Backlog

EXHIBIT VII

The second phase of this report (Exhibit VI) deals with a longer range problem—the effective use of engineering hours are analyzed by project time and overhead time, i.e. training, general meetings, travel between plants, etc. Plotting the project percentages over a period of time will show a utilization trend which, if downward, demands supervisory review. If the weekly percentage is below the normal or budgeted utilization factor, immediate review may be in order to determine and act upon the reasons for the decline.

Another analysis defines the uses for which project hours are expended and is useful in showing the extent to which engineers are required to perform sub-engineering level work. (See Exhibit VII.) Unfavourable trends in this area must get action if the short supply of engineers is to be used to best advantage. The need for additional technicians, draftsmen or clerical help may be indicated.

The fourth and final section of this report (See Exhibit VIII) concerns the over-all level of the department's work including that which is farmed to outside firms. The plot of departmental backlog hours may indicate that too many projects have been started, that there is a growing need for additional help or that more work must be farmed out. On the other hand, the plot of outside backlog hours may signal an impending administration problem with too much work going on outside the department, requiring excessive travel and supervisory attention. This entire report is an invaluable aid to management of the department and, in its preparation and analysis, the accountant is projected into a number of nonaccounting problems.

MECHANICAL DEVELOPMENT DEPARTMENT
WEEKLY ENGINEERING HOURS ANALYSIS
SECTION III—PROJECT HOURS ANALYSIS (ENGINEERS ONLY)

Code	Activity	% of Total Project Hours		
		Current Week	Year to Date	Previous Year
1	Investigation	10	12	11
2	Design	39	42	48
3	Shop Drawings	3	2	1
4	Detailing	2	1	1
5	Procurement	10	12	8
6	Shop Trials	10	15	11
7	Report Writing	2	2	1

EXHIBIT VIII

Commitment Records

In another pertinent area of expenditures control the accountant must be expected to maintain and report on project commitments in order that department management may know at all times the status of actual versus appropriated expenditures on each project. When expenditures committed on a project reach a certain level, fifty per cent of the appropriated amount for example, a review can be made to determine whether remaining funds are adequate to complete the

job. If less than half the job is completed on half the funds, what plans could be adjusted to permit full completion of the project within the appropriated amount? If not, should additional funds be requested? A similar review may be called for at the seventy-five per cent level. Commitment records not only prevent spending in excess of authorized amounts, but the resulting reviews force consideration of spending alternatives which otherwise go unnoticed.

Project Review

Post closing review of each project is often a useful process from the financial as well as the technical standpoint. Analysis of expenditures on a particular project itself or in comparison with other projects may yield clues to aid in future planning. Even more important is an analysis of savings realized compared to those claimed in the Work Programme and in the Appropriation Request. In that story lies the final evaluation of how well the machine is serving its purpose. Follow-up on machine performance is needed over perhaps a year's time with the accountant's periodic cost analyses indicating whether the savings level is being maintained. With this continuing flow of cost information areas of weakness can be readily spotted and necessary corrective action taken.

Conclusion

While a particular Mechanical Development Department was borne in mind throughout this discussion, the principles dealt with have equal application in many areas. The accountant in any engineering group can furnish strong backing with particular emphasis on expenditures planning. In the actual routine reporting of costs in engineering work few problems of importance will be encountered, but through imaginative, timely reporting and review of basic data the accountant projects himself into the management picture. By entering this entire activity with a broad perspective he not only gains valuable experience but can be of great assistance in furthering a programme that has serious long-range impact.

FOR FURTHER READING

GETTING THE MOST FROM RESEARCH AND ENGINEERING, A.M.A. Manufacturing Series No. 217.

FOR COST ACCOUNTANTS AND ENGINEERS ONLY, by R. C. Taylor, N.A.C.A. Bulletin, Aug. 1954.

ACCOUNTANT AND ENGINEER: WORKING PARTNERS, by A. E. Carlson, N.A.C.A. Bulletin, Aug. 1953.

Good Supervision and How To Get It . . .

By S. D. FLINN,
Comptroller, United States Steel Supply Division, United States Steel Corporation, Chicago, Illinois.

As modern business grows in size and complexity and the percentage of the population engaged in office work increases, good supervision of the office organization becomes a matter of paramount importance. In this article the author delineates the qualifications of a good supervisor and outlines some of the methods used by companies to develop and train supervisors.

THE DEVELOPMENT and growth of modern business has resulted in many complicated problems whether the business be large, medium-sized or small. With this growth has come the change from the "one-man business" with little or no formal record-keeping to the complex and highly specialized business organizations which we know today. This, in turn, has developed the need for efficient supervision which has attained its full flowering in the creation of a professional management class.

Volume and varied operations necessitate the development, recording and analysis of information upon which management decisions may be based. This, together with the great volume of records imposed upon business by governmental agencies, has resulted in an astounding increase in office functions and clerical personnel. To bring home to you the magnitude of this growth, I should like to refer you to certain information from the Bureau of Labour Statistics:

> In 1900, at the turn of the century, less than one million of the people of our country were engaged in office work. By 1940 this number had increased to approximately 4½ million, an increase of 350% over the 1900 figure. During the same period, factory workers increased only 75%. During the years 1940 to 1948, office workers increased to 7½ million or 650% over the number in 1900. In April 1954, there were 8 million clerical workers, an increase of 700% over the 1900 figure.

The efficient supervision of so large a segment of our working population is certainly of the highest importance to business, both large and small. The selection, training and perpetuation of a supervisory force for office activities is no less important than the perpetuation of management itself for, indeed, it is a part of that management.

Organization and Personnel Administration

Probably the most important single problem in any operation is organization planning and personnel administration. It is essential that not only the proper organization be set up to cover all required functions and responsibilities but also that the right type and quantity of supervision be ascertained, that the proper number of non-supervisory personnel with the proper assortment of skills be deter-

mined, and that they be trained as efficient and capable workers. The problem is to provide a force that is sufficiently specialized to perform complicated and detailed tasks yet flexible enough to meet changing or emergency conditions. In addition, the individuals should be capable of performing a sufficient variety of assignments to secure experience broad enough to permit personal advancement.

Responsibilities assigned to each individual should be clearly defined in written position descriptions and meticulously followed. Failure to formalize duties and functions may result in misunderstanding and lack of coordination. Clear-cut lines of responsibility should be established so that the same function is not assigned to more than one person or unit. Duplication and overlapping must be prevented as they are not only inefficient but also give rise to confusion and friction. Each unit of the organization must be carefully planned so that its assigned functions do not become too numerous and complex to be handled effectively. Functions should be properly classified so that related activities are grouped together. The grouping of unrelated functions through unplanned assignment will result in units and individuals performing totally unassociated duties.

The Basic Supervisory Functions

Stated briefly, the basic functions of all supervisory personnel are:

1. To plan and recommend the objectives, organization structure, personnel policies, performance standards, procedures and budgets required to perform assigned responsibilities.
2. To administer and maintain an adequate and economical organization.
3. To interview and select personnel and be responsible for their training, development, rating and remuneration.
4. To delegate authority and responsibility.
5. To maintain internal and external contacts necessary to perform assigned responsibilities adequately.
6. To control results in relation to established objectives, to evaluate performance against the established standards and to initiate corrective action where necessary.
7. To direct and conduct activities toward established objectives within established policies and in coordination with all affected or related activities.

Qualifications of a Good Supervisor

In the light of these basic supervisory functions, what does it take to be a good supervisor? The two fundamental requirements of a good supervisor are: first, that he perform the duties within his prescribed responsibilities in the best possible manner and, second, that he perform them at the least possible cost. The first of these requirements

is so self-evident that it hardly needs comment. I should like to comment, however, on the second. Almost every member of a business organization is conscious of the fact that costs must be controlled and reduced to an absolute minimum to insure the successful operation of the business. Unfortunately, most of us think in terms of cost control for manufacturing and selling activities. Too little thought is given to the cost of clerical functions. Perhaps this is due to an absorption in the details of the daily work or perhaps to the acceptance of clerical work as a necessity without consideration of the cost. I submit to you that every dollar spent in clerical effort is just as much a charge against the profit and loss statement of our companies as is the money spent in production, engineering, sales and distribution of their products.

Let's try to set down some qualifications and requisites for a good supervisor:

1. *Personal qualifications.*
   a. Habits of thought
      Interest in the work
      Intellectual honesty
      Imagination and originality
      Flexibility
      Patience
      Cooperation
      Resourcefulness
   b. Habits of action—work and behaviour habits.
      Industry
      Personal behaviour.
      Accuracy and neatness
      Written and oral expression—ability to communicate
      Promptness in making decisions and taking appropriate action
   c. Personal characteristics.
      Emotional stability—evenness of temperament
      Health, vitality and strength
      Character and sincerity
      Courage
      Leadership
      Initiative and aggressiveness
      Self-respect
      Social skills

2. *Thorough knowledge of all jobs performed*

In times past the person most likely to be selected as a supervisor was the individual who could turn out the most work. Too often he continued to perform a great amount of detail and was often so immersed in it that he had no time for supervising the work of others.

In such a case he was at best merely a pace-setter. Under the concept of modern management, a supervisor is a manager, not a worker. He should not concentrate on doing the functional job of his department. He should free himself so as to have time to study his departmental jobs and find better and less costly ways of doing them. If he discharges this responsibility properly and oversees the work of the people under his direction properly, supervision is a fulltime job, not the part-time job that some supervisors of the old school made it. Of course, in a very small company it may be necessary for a supervisor to be a working supervisor simply because the number of employees and the managerial duties would not require his full time and attention. Even in this case he is still charged with the responsibility for proper planning and efficient and economical operation.

3. *Ability to get along with people*

In modern business, ability to get along with people is a most essential requisite for a successful supervisor. This implies proper relationship between him and his subordinates, his associates, and his superiors. Proper personality and attitude inspire the loyalty of subordinates, cooperation of associates, and approval of superiors. The day when a supervisor directed his people simply by authority alone and required unquestioned obedience is long past. A successful supervisor commands the respect of his people by his knowledge, his fairness, the soundness of his judgment, and his ability to lead rather than drive. He earns the cooperation of his associates through an understanding of their problems, a willingness to coordinate his work with theirs, and a pleasant, helpful attitude rather than a critical one. He implements and increases the effectiveness of his work by following intelligently the directions of his superiors and contributing helpful ideas of his own which may influence the decisions of his superiors. He should be able to formulate programmes and successfully sell them and their merit to his superiors so they will be adopted and put into effect. In other words, he is far from a "Yes" man.

Let me emphasize at this point the importance of equitable handling of human relationships. Along with the development of modern business there has been a tremendous development of social consciousness and industrial relations. Personnel problems are present in office groups as well as in others, whether in large or small offices, and require the same skillful handling. There is a definite need for uniform personnel policies especially in the larger organizations. In these larger groups personnel problems cannot be handled equitably on the basis of individual circumstances. To attempt to do so will invariably result in inequitable handling of similar cases and lead to charges of discrimination. I know of no greater source of dissatisfaction among employees or, indeed, among human beings than a feeling of unfairness, favoritism or discrimination between individuals. Written records should be kept

of employee requests, complaints, absence, tardiness, sick leave, and items of a like nature. When personnel problems arise reference to these records will reveal what has been done in the past under like circumstances, as a guide to present decisions and actions.

4. *Ability to Delegate*

Delegating a job is about the most difficult thing a new supervisor has to learn. This is especially true if he has been hard working, industrious and conscientious on his way up to the supervisory level. One of the things which has qualified him for a supervisory appointment is a certain amount of self assurance and confidence in his own ability. Generally, he has performed better than the average employee with whom he has worked, or he would not have been selected for a supervisory job. Consequently, it is sometimes very difficult for him to learn to trust other people whom he considers unable to do the job as well as he would himself. The successful supervisor, however, must overcome this tendency and must not think that he can do the job better than anyone else. He must not be afraid to delegate responsibility.

As a matter of practicability, no supervisor can perform all the work himself. If this were true, there would be no need of supervisory employees. If he fails to delegate work and the responsibility for accurate and effective performance of it, he succeeds only in obstructing the efficient operation of his group. If he insists on making all decisions concerning routine details of the work which should be handled by subordinates, he stultifies his personnel. In turn, he will be so overworked himself that more important things which do require his attention will not receive the consideration they merit. The work of the unit will bog down and, in effect, the supervisor becomes a personal bottleneck, decreasing the effectiveness of the unit. On the other hand, if he can think of the employees under his direction as being extensions of himself, with proper guidance and direction he will multiply his own effectiveness and that of his group many times over.

He must learn how to get away from details, but develop the faculty of knowing what is going on without following every small detail.

5. *Ability to Obtain Maximum Performance*

In order to obtain maximum performance from the employees under his supervision, the supervisor must know the proper standards for quantity and quality of work. He must be able to evaluate the performance of individuals in his group against these standards. The development of standards and their application is one of the most important features of control which a supervisor can apply. If no such standards exist, there is no basis for measurement of the work performed. There is, therefore, a great disparity of performance between individuals both as to quantity and quality. The whole unit operates under some vague hypothetical yardstick which produces anything but

effective and high quality results. It is most frustrating for individuals to be criticized for sub-standard work and yet not know the standards by which they are being judged. It is highly essential that they do know what the standards are and that they are fair, equitable, and not impossible of attainment. The great majority of people are eager to meet their immediate supervisor's requirements if they know what they are, if for no other reason than for self advancement.

One good and quite familiar example of the setting of standards for quality is found in most accounting departments. Every good accounting system must have effective internal checks and controls. Accuracy is a primary requisite. This is particularly true in a large department where, because of volume of work performed, some amazingly inaccurate and misleading information can be produced if effective controls and checks are not utilized.

In working with figures, the most rudimentary approach to accurate control is to re-work or "double check" each computation. The first variant of this simple method is to have two individuals make the same computation and compare the results to eliminate the human possibility of one individual making the same error twice. Another approach is to have all the work reviewed in detail by the supervisor or an individual with sufficient experience and knowledge to detect inaccuracies. Employees of long service often develop an uncanny ability to pick up discrepancies which are apparent because of their extensive knowledge of the work and their resulting sense of values.

Control of accuracy in a large department, however, cannot depend entirely upon any one of these methods. The "check" and "double check" methods are too cumbersome and expensive. The supervisor, if he is doing a proper job of supervision, is occupied with management problems and, in any event, can observe only a small part of all the clerical work performed. Similarly, it is difficult to find any one individual or individuals sufficiently acquainted with all the ramifications of a large operation to check solely through knowledge and know-how.

Controls of the types mentioned are of limited use in a large department and are augmented by other types. Numerous internal checks are already inherent in accounting and clerical systems. Work performed by different individuals or by different groups which, when completed, is of a similar nature may be compared as a check for accuracy. The operations of each department are studied carefully and certain control points developed to check the work as it moves through the various stages of processing.

However, the goal is not attained merely by adequate checks. The check must become a part of the work habits of the personnel. Written instructions and check lists should be prepared to provide the basis for an orderly and efficient operation of the internal controls. The checks must be built into a written plan employing a systematic follow-

up which will insure their execution. These steps, together with the supervisor's own knowledge of the operations under his jurisdiction, will enable him to attain an efficient check on quality. Much the same process applied to clerical production will furnish adequate means for measuring and controlling it.

6. *Ability to Plan Work*

The good supervisor must know in advance what the work requirements are and make plans for the prompt and efficient execution of these requirements. He is charged not only with the satisfactory performance of the duties of the group, but also is responsible for meeting the deadlines set for completion of the assignments.

This is a particularly important point in the modern accounting department where the needs of top management require earlier and earlier information. Years ago it was considered good performance to close the current month's figures by the 15th or 20th of the following month. For years following, the standard was the 10th of the month. Now, it is not uncommon for management to require profit and loss figures as early as the 5th working day of the month. Very precise planning is necessary to accomplish this. Written schedules must be prepared in advance, and the progress of the work must be checked step by step to see that they are met. Each supervisor must know, not only how his own work is progressing, but also how that of the other divisions upon which he relies for information is progressing. A delay there will throw out his own schedule. Such exact scheduling depends upon a high degree of coordinated effort.

Now let's get into the second part of the subject, "How to Get Good Supervision". I shall attempt to outline some of the methods which can be and are used by companies to develop and train supervisors.

Training of Supervisory Personnel

In the first place, I would like to emphasize the absolute necessity for some definite and planned training programme. The perpetuation of management is one of the most pressing responsibilities of every business of any size. Many smaller companies which have been started by a single individual have grown and prospered over the years solely through the founder's energy, know-how and application to the work. Eventually the time comes when he no longer wishes to be, or can be, active in the business. Perhaps he has no son who is interested in succeeding him in the business. Perhaps he has not felt it necessary to develop some younger man or men to whom he can entrust the destinies of the company. When he becomes incapacitated or upon his death, the company falters, flounders, and eventually must be sold or liquidated.

In larger corporations this simply cannot be allowed to happen. The stockholders must be protected and, therefore, management must be perpetuated. It therefore falls upon every member of management to develop and train understudies, and the effectiveness of his administration is measured to a considerable degree by his ability to develop the organization under him.

Promotions should be made, if possible, from within the ranks, but sometimes it becomes necessary to provide a manpower pool for special executive training and development. Business administration school graduates make ideal candidates for this type of training. Many large companies contact a number of recognized business administration schools each year, interview likely candidates and select graduates for this training. Personnel so selected bring to the company a sound educational background and an intelligence trained by formalized education which, when supplemented by experience and training within the corporation itself, will produce a high type of executive personnel for later years.

These recruits may be given various types of special training, but it usually begins with an orientation period during which the recruit becomes familiar with the operations of the company. This may be followed by prescribed classroom instruction or by time spent in each division of the office under the direct instruction of the supervisor. Knowledge of the functions is attained through such instructions and by means of observation or practice work. After having spent the required time in each division, the trainee has acquired a good working knowledge of the entire department and is then given his first regular work assignment.

Some corporations prefer that the trainee receive this training while on specific job assignments, but whichever method is used, the important thing is to have a well planned programme through which the trainee progresses on a predetermined schedule, without loss of time, and without experiencing the dissatisfaction and frustration which arises from a loosely planned and ineffective programme.

When the trainee is assigned to his first work assignment it is wise to place him in one of the staff groups for several reasons. In the first place, his educational background should fit him for staff work. Second, staff work, by its broad interests, is a good place to continue his training for executive duties. Third, the lower grades of clerical work can be performed as well, or better, by individuals with less training and background, and to that extent it is a waste of investment and training to place the trainee at these lower levels.

Most training programmes for supervisory personnel rest on the premise that beyond certain basic qualifications and personality traits, good managers are made rather than born. Men can develop themselves and also can be trained by the company to become better supervisors

and executives. Certainly one of the greatest mistakes that management can make is to promote an employee into a supervisory position and then forget him. An individual must learn to be a good supervisor in just the same way as one must learn to be a good salesman, by training, by example and by experience.

Post-Supervisory Training

Supervisory training, after the supervisory level has been reached, is perhaps more important than pre-supervisory training. Supervisory personnel who do not start as management trainees can be helped and developed through definite understudy programmes which are specially applicable to smaller companies.

The problem in a large organization is to avoid undue specialization and rather to create pools of individuals who are well trained and are prepared to take over a wide variety of positions at the next higher level of management. This involves training on the job, supplemented by formal lecture courses and classroom work. To provide training on the job and at the same time effectively to man all supervisory positions requires comprehensive preplanning and timing. It involves a specific job rotation plan such as:

1. Assignment of candidates basically qualified to various first-line supervisory positions for a fixed period of time on a planned and scheduled basis.

2. First-line supervision so displaced, if possessed of sufficient potential and advancement, must likewise be assigned to another position of first-line supervision or to a staff function.

3. The period of training incumbents of any first-line supervisory position may vary, due to knowledge of the position and varying complexity.

4. The full period of training should include incumbency in the major functions to the extent deemed essential.

5. Candidates selected for supervisory training should be made aware of their schedule to permit advance preparation for positions by acquiring knowledge of the procedures and by visits to the department involved.

6. Close measurement of individual supervisory performance should be made to detect and arrange for correction of weakness or elimination of personnel.

In closing, I would like to give you my own ideas of ten "don'ts" for supervisors which I think might well be the ten commandments of good supervision:

1. Don't be afraid to accept responsibility.

2. Don't be afraid to take initiative. When you have a problem, go to your superior with a proposed solution and an alternative for

his decision and approval. Don't ask him to make all the decisions or resolve all your problems while you stand passively by.

3. Don't ask for direction in every move you make.

4. Don't use the ideas of others without giving them proper credit. Failure to give others credit for ideas frustrates and stultifies them and eventually dries up the source of many good, usable ideas. Don't be afraid to give your employees credit for constructive suggestions. There is plenty of credit to go around, and you will be given credit for having the wisdom to recognize a good idea and put it into use. This promotes progress, loyalty and cooperation within your group.

5. Don't be complacent. Don't start by assuming you and your group are perfect. The supervisor who does so is least likely to approach perfection, and no improvement can be expected from one who cannot admit the possibility of it.

6. Don't be an obstructionist. Keep your mind open—accept new ideas. You never stand still. You either go forward or backwards.

7. Don't get angry. In anger you do and say things for which you are later sorry. You lose your ability to think clearly and calmly, and thus lose your effectiveness.

8. Don't reprimand subordinates before others. To do so hurts their self respect, causes them to lose dignity, and makes them angry, completely destroying the effect of the intended advice or direction.

9. Don't be critical of subordinates. Handle them on a basis of constructive suggestion instead of destructive criticism. You will then develop their performance instead of destroying their will to work.

10. Don't fail to commend employees for good performance. There is no greater incentive than judicious commendation.

FOR FURTHER READING

WHERE IS MIDDLE MANAGEMENT?—Claude V. Swank, A.M.A. Personnel Series No. 153.

USING SUPERVISION TO SPREAD ECONOMIC UNDERSTANDING—E. S. Bowerfind, A.M.A. Personnel Series No. 145.

STEPPING UP EFFECTIVENESS OF OFFICE SUPERVISION—Esther Becker, A.M.A. Office Management Series No. 124.

Depletion Accounting for Oil and Gas Producers . . .

By R. B. VAUGHTERS
Price Waterhouse & Co., Houston, Texas.

The author outlines some recommendations for depletion accounting in the oil and gas industry which are not considered generally accepted practice and proceeds to justify these recommendations by reference to the basic accounting concepts.

IN MOST major respects the depletion accounting practices followed today in the industry are generally uniform, and some of the recommendations I shall make, while seemingly justified in the light of basic accounting concepts, would constitute departures from what are considered to be generally accepted accounting principles in the industry. It is usually true that accounting practices must serve business purposes; if there can be general agreement that the proposed changes in accounting policy will give greater significance to financial statements, a gradual adoption of the policies expounded may be expected.

What Is Depletion Accounting?

Every accounting book and every accountant has a different definition for depletion. The term may be defined, generally, as "The exhaustion of the cost of a wasting asset, such as a mine, timber tract *or an oil field,* resulting from the conversion of the natural resources into inventories". If that is a fair definition of depletion, then we might well define depletion accounting as "Accounting for the exhaustion of the cost of a wasting asset, such as a mine, timber tract *or an oil field,* resulting from the conversion of the natural resources into inventories". Although the term "depletion" applies to all wasting assets, this discussion will be limited to the field of petroleum properties. The principles involved are the same for all wasting assets.

For federal income tax purposes, of course, the vast majority of oil companies charge off intangible drilling expenditures currently. For book purposes, however, a large number charge off intangibles to expense as incurred while others capitalize such costs and amortize them along with the lease cost. Whereas lease acquisition costs and intangibles are usually maintained as separate items of cost on the books (so that they may be readily determined for purposes of federal income taxes), depletion of these costs represents a single problem.

Why Have Depletion Accounting?

In any deliberation as to whether an income statement fairly presents the results of a company's operations, it is desirable to consider the basic accounting concepts which govern the preparation of financial statements generally, and then the accounting principles which should be followed to achieve the results desired. Contrary to popular belief,

accounting principles, instead of being rigid rules, are guides that influence the application of procedures designed to carry out the intent and usefulness of accounting.

As presently understood, the most important of the basic accounting concepts are as follows:

1. Consistency
2. Matching costs and revenues
3. Conservatism
4. The going concern
5. Historical Costs
6. Stability of the dollar
7. Distinguishing between capital and income

The foregoing concepts are not of equal importance; in fact, there has been a gradual shift of emphasis among these concepts. Without attempting to consider their relative importance it appears that the concepts of consistency and matching costs and revenues deserve special emphasis. In our deliberations, also, recognition must be given to the fact that corporate net income for a short period of time (and a year is really a short period of time in the life of a going concern) cannot be determined exactly.

I shall touch briefly on the concept of consistency. I think that we are all agreed that this is a recognized concept and one that it is assumed is being followed at all times unless there are indications otherwise. It is not by chance that the standard opinion used by most public accountants contains the expression "In conformity with generally accepted accounting principles applied on a basis *consistent* with that of the preceding year." If such consistency does not exist in all material respects, the public accountant is obligated to clearly set forth the effect of the inconsistency.

In my opinion, the concept of matching costs and revenues is so fundamental in the determination of income that it hardly justifies discussion. I think that all accountants agree with the concept in theory; the only important differences of opinion arise in the determination of which costs to match with which revenues. The principle of matching is the very foundation of the income account and is the underlying basis for the capitalizing or deferring of costs in the balance sheet. Matching costs and revenues of producing oil and gas companies involve a number of controversial items. Difficult problems continually arise in identifying costs, in allocating those costs to the proper periods, and in deciding upon capitalization or expense policies. These problems arise particularly in connection with "finding" costs, such as geological and geophysical expenses, lease bonuses and rentals, and dry holes. If we can all agree that the matching of costs and revenues is a desirable concept and is one which we are all attempting to follow

in our accounting records and financial statements, I think that the principles of depletion accounting discussed subsequently follow naturally. If you do not subscribe to the concept of matching costs and revenues, then you will disagree with some of the theories which I will advance. With all due respect, I cannot conceive of an accounting system today which is not based on that concept. That is not to say, of course, that ten or twenty years in the future we may not be emphasizing other basic concepts of accounting. As mentioned previously, there has been a gradual shift of emphasis among these concepts. For the most part, they have been in general use over long periods of time, indicating that they are logical and useful in business activity. However, they have been gradually modified from time to time due to changes in business and economic conditions, and the modifications have been generally accepted.

What Costs Should Be Capitalized?

In line with the concept of matching costs and revenues it would appear that all costs incurred by an oil company in finding productive properties should be capitalized and charged off ratably on some reasonable basis over the productive lives of the properties. Such "finding" costs would include geological and geophysical expenses, land and leasing costs, dry hole costs, lease rentals, bottom hole money, etc. As a matter of actual practice, only a few companies capitalize any of these "finding" costs and then only to the extent of capitalizing some portion of their geological and geophysical expenses. Actually, there are many different practices in effect. It is not at all unusual to find that the only lease costs that have been capitalized are bonuses. From that extreme we can find examples of companies that capitalize portions of leasing costs and geological and geophysical expenses. It is not at all unusual for a company to expense such minor items of costs as legal fees, title costs, etc. I believe that most companies justify the expensing of leasing costs, other than bonuses, on the basis of immateriality and consistency. Since the much more significant items known as "finding" costs can hardly be ignored on the basis of immateriality, the justification for the omission of these costs is practicability and consistency. From a practical standpoint, I believe that the larger, more stable oil companies are better justified in omitting such costs than would be companies still more or less in the growing stage. Furthermore, I don't believe that conservatism, alone, is a fair justification for the practice of not capitalizing these "finding" costs. As we all know, there is very little relationship between the cost of producing properties and the expected ultimate recovery from those properties. It should be recognized that the balance sheets of producing oil companies have definite limitations in presenting financial position regardless of the accounting policies followed. As a general rule, accounting is based on cost, and values in excess of cost are not recog-

nized in the accounts until realized through sale or other disposition. It is not at all uncommon for oil companies to negotiate loans aggregating millions of dollars when balance sheets and income statements reflect values and income only nominal in amount. The loans are based on the underground reserves of the companies, and the financial statements have obviously become secondary in importance to the geologists' reports. In this respect, I am not referring to purchased producing properties because the purchase price of such properties would bear a definite relationship to the expected recoveries.

As mentioned previously, if we are to stick closely to the concept of matching costs and revenues, dry hole costs should certainly be a capitalized item. Of course, no company will admit in advance that it drills dry holes. I can remember being severely rebuked several years ago for suggesting to an officer of an oil company that separate budget authorizations should be established for dry holes. His retort was, "Son, we don't authorize the drilling of dry holes".

What Operating Unit Should We Use in Depletion Accounting?

From a theoretical standpoint the depletion unit might well be the company's entire operations. Since the operations of most oil companies are continuing in nature, however, such accounting would obviously not be practicable. The next best approach might be to consider the field as the accounting unit. In such cases, all of the costs relating to a field would be capitalized as the cost of that field, including wildcat dry holes which help define the limits of the field. If such a policy were followed, all "finding" costs resulting in producing fields would be capitalized, whereas those costs which do not result in producing fields would be charged off in a period in which the final determination was made. Such a policy of field accounting is a compromise, but under the circumstances it appears to be a practical solution.

There is considerable merit for the use of the field as the depletion unit, since the field is the economic unit. It has common technical characteristics, and a large part of nonproductive drilling occurs in connection with efforts to extend or define field limits. There has been considerable interest shown in the use of the field rather than the lease as the depletion unit, but there has been no general adoption of this practice as yet. One major company with which I am familiar has gone so far as to adopt the area as its unit for depletion purposes. If the field or area should be adopted as the unit, it would be possible to capitalize a larger portion of "finding" costs in a rational manner and deplete them along with other capitalized costs.

Whether or not you subscribe to the theory of capitalizing all costs of finding an oil field, I think you can see the justification of the use of the field instead of the lease as the basis for your book account-

ing. There are a number of factors which contributed to the adoption of the lease as the accounting unit, one of the principal of which was federal income tax requirements. Nobody likes to keep two sets of books, one for financial statement purposes and the other for federal income tax purposes, and if it is at all possible to use the latter set of books for both purposes you are justified in doing so. If you are already keeping a separate set of lease cost records for federal income tax purposes, and I am sure that this is true for most of the larger companies, you might very well change to a field basis of accounting for book depletion purposes.

It would probably be well for me to clarify my position at this point. I have recommended, as a matter of good accounting theory, that all "finding" costs should be capitalized. I realize that as a matter of practicability it would be very difficult to match costs and revenues on a company-wide basis, particularly in the case of a going concern. This is true because companies are continually looking to the future and spending considerable sums of money for which results will not be known for many years. The next best thing would be to use the field or area as the accounting unit and capitalize, to the extent practicable, all costs relating thereto. Under this method of accounting, all such costs relating to areas not found to be commercially productive would be charged to income at the time such determination is finally made.

Depletion Methods Currently In Use:

There are two general methods in use for determining cost depletion. The one most widely used, which for lack of a better name I shall call the "Texas method," attempts to allocate all *actual* costs incurred over the developed reserves for the lease. The other method is known as the "California method". In theory, the "California method" is more accurate than the "Texas method," in that it results in a more even flow of depletion charges per unit of production. Under this method the depletion charge per unit of production is based on the estimated total development cost for the lease and the estimated total proven reserves, rather than the actual cost to date and actual developed reserves to date. Although the "California method" is preferable in theory, it is even more of a "Guesstimate" than the "Texas method". This is due to the fact that in addition to the usual guesses as to recoverable reserves, the accountant or the company's management is faced with the crystalball-gazing act of forecasting the cost which will be incurred in drilling up the field. In my opinion, long-winded computations of depletion by properties or leases are but a mathematical means of refining a guess; from a broad economic point of view they are unsound and erroneous.

What About Leases Producing Both Oil and Gas?

Many companies operate leases producing both oil and gas in commercial quantities. This presents the question of "What unit or yardstick should be used in computing unit-of-production depletion?" Some companies with which I am familiar follow the policy of considering, for depletion purposes, only the production and the estimated recoverable reserves of that product which is predominant in the lease. For example, if the company's geologists estimate that the value of oil to be recovered is in the neighbourhood of $300,000 and the value of the gas to be recovered is only $50,000, all depletion computations would be based on the oil production and the estimated recoverable reserves of oil. Other companies follow a practice which is more accurate theoretically and which takes into account the relative heat value of the two products in arriving at composite yardsticks for production and estimated reserves. For example, on the basis of 6 MCF of gas being equivalent to one barrel of oil, a common unit might be established for the two products. I will not attempt to defend the use of 6 MCF of gas as being equivalent to one barrel of oil—this is just one of many bases used for determining the relative values of the two products.

The justification of the use of the first method outlined is that as a general rule the oil and gas will be produced in approximately the same relative proportions throughout the productive lives of the leases. Of course, this condition does not exist in many instances, and where it does not exist some slight distortion in periodic depletion will result.

Recommendations:

By way of summary, I first recommend that all costs related to finding a producing oil field should be capitalized to the extent practicable. I realize that in making this recommendation I am going contrary to an accepted practice in the industry. I also realize that if the current practices are followed consistently and that if there are not too many significant fluctuations in the operations of a going concern the income statement is not materially affected. My second recommendation has to do with the matter of using the field or area as the accounting unit rather than the lease, as most companies are doing today. Some of the larger companies have thousands of leases each, and I wonder if it has occurred to them just how much time is being spent methodically computing depletion for each of those leases. When the computations are completed, what do you have besides a carefully checked set of figures based on a guess? Think of the work that would be saved if these calculations were limited to only a hundred or so fields rather than thousands of leases. One of the principal, but more elusive, factors in determining a per-barrel or per-MCF depletion unit is the estimating of underground reserves. While the estimated

reserves for individual properties may vary widely from final performance, all properties as a whole may average out and be nearer reality. This assumes, of course, that optimism and pessimism are kept to a minimum in their preparation.

FOR FURTHER READING

DRILLING AND DEVELOPMENT COSTS OF OIL WELLS—by Presley Ford, N.A.C.A. Bulletin, Aug. 1956.

ACCOUNTING POLICIES OF OIL COMPANIES—by C. L. Dunn, N.A.C.A. Bulletin, Aug. 1956.

CONFERENCE PAPERS 1956—The Petroleum Accountants' Society of Western Canada.

PERSONALS

W. A. Lockley, R.I.A., of the Bay of Quinte Chapter, has been appointed Accountant with Deloro Smelting & Refining Co. Limited. He was formerly with the Belleville Lock Co. Ltd.

Leonard G. Dawson, R.I.A., has been appointed Secretary-Treasurer of the Davis Leather Co., Newmarket, Ontario. Mr. Dawson is a member of the Niagara Chapter.

Alex N. Gibson, R.I.A., formerly employed with J. H. Connor & Sons Ltd., Hull, Quebec, has accepted the position of Assistant Controller with Kelvinator Canada Limited, London, Ontario.

David A. Williams has been appointed Manager of Methods and Procedures of American-Standard Products (Canada) Limited in Toronto. Mr. Williams was previously employed by Riddell, Stead, Graham & Hutchison, Montreal.

C. F. Frederickson, R.I.A., formerly associated with Gair Co. Canada Ltd., Toronto, is now with Mannesman Tube Company, Sault Ste. Marie.

William S. Snook, R.I.A., formerly Secretary-Treasurer of the Halifax Chapter, has been promoted to the position of second Assistant Manager of the Royal Bank of Canada, Main Branch, in Montreal.

O. C. Redpath, R.I.A., of the Vancouver Chapter, has been appointed Office Manager and Chief Accountant of Evergreen Press Ltd. Mr. Redpath was previously affiliated with the Sun Publishing Co.

G. E. Owen, R.I.A., is now associated with the Northern Engines and Equipment (B.C.) Ltd., Vancouver. He was formerly employed by Dietrich-Collins Equipment Ltd. in Vancouver.

Student Section . . .

EXAMINATIONS, 1956
ACCOUNTING I

QUESTION V (30 marks) Comments by C. C. Gourlay

JOE HALL
TRIAL BALANCE
December 31st, 1955

Cash on hand	$ 2,750	
Accounts Receivable	6,225	
Accumulated provision for doubtful debts		$ 650
Notes Receivable	2,775	
Merchandise inventory, 31 December, 1954	4,500	
Unexpired insurance, 31 December, 1954	350	
Land	1,000	
Buildings	12,100	
Accumulated depreciation, buildings		4,840
Furniture and fixtures	1,650	
Accumulated depreciation, furniture and Fixtures		660
Goodwill	2,000	
Bank of Montreal		2,550
Accounts Payable		1,650
Notes Payable		1,005
Joe Hall—Capital		18,500
Joe Hall—Drawings	2,850	
Sales		105,725
Returned sales and allowances	215	
Freight and express on sales	875	
Salesmen's salaries	6,420	
Advertising	645	
Purchases	85,300	
Freight and express on purchases	625	
Office salaries	3,740	
Stationery and printing	425	
Insurance	415	
Taxes	275	
General expense	285	
Cash discount	160	
	$135,580	$ 135,580

Merchandise inventory at 31st December, 1955, amounted to $5,500. Depreciation is to be provided on the straight line basis at the following rates:

Building 4%
Furniture and fixtures.... 10%

Provision for doubtful accounts at 31st December, 1955, must be altered to equal 10% of outstanding accounts and notes receivable. Unexpired insurance at 31st December, 1955, amounted to $300.

REQUIRED:

(a) Journal entries to give effect to all necessary adjustments and closing entries, including closing of proprietor's drawings and profit or loss for the year to capital account.

(b) Profit and loss statement for the year ended 31st December.

(c) Balance sheet as at 31st December, 1955.

SOLUTION TO QUESTION

(a) Provision for depreciation—Bldg.	$484	
Accumulated Depreciation—Bldg.		$484
4% of $12,100		
Provision for depreciation—F. & F.	165	
Accumulated Depreciation—F. & F.		165
10% of $1,650		
Allowance for Bad Debts	250	
Provision for Bad Debts		250
10% of $9,000 = $900 (650 + 250 = 900)		
Insurance Expense	50	
Prepaid Insurance		50
To reduce asset balance to $300		
Sales	105,725	
Merchandise inventory, 31 Dec. 1955	5,500	
Profit and Loss		111,225
To close to Profit and Loss		
Profit and Loss	104,829	
Merchandise inventory, 31 Dec. 1954		4,500
Provision for depreciation—Bldg.		484
Provision for depreciation—F. & F.		165
Allowance for bad debts		250
Returned Sales and allowances		215
Freight and express on sales		875
Salesmen's salaries		6,420
Advertising		645
Purchases		85,300
Freight and express on purchases		625
Office salaries		3,740
Stationery and printing		425
Insurance		465
Taxes		275
General expense		285
Cash discount		160
To close to Profit and Loss		
Profit and Loss	6,396	
Joe. Hall Capital		6,396
To close to Joe. Hall's capital account		
Joe Hall Capital	2,850	
Joe. Hall Drawings		2,850
To close drawings to capital account		

(b)

JOE HALL
STATEMENT OF PROFIT AND LOSS
for the year ended 31st December, 1955

Sales			$ 105,725
Less:			
Returned sales and allowances		$215	
Freight and express on sales		875	1,090
			$104,635
Cost of Goods Sold:			
Inventory—31 Dec. 1954		$4,500	
Purchases	$85,300		
Freight and express	625	85,925	
		$90,425	
Inventory—31 Dec. 1955		5,500	84,925
Gross Profit			$19,710
Deduct:			
Selling Expenses:			
Salesmen's salaries	$6,420		
Advertising	645		
Allowance for bad debts	250	$7,315	
Administrative Expenses:			
Office salaries	$3,740		
Stationery and printing	425		
Insurance	465		
Taxes	275		
General expense	285		
Provision for depreciation	649	5,839	
Other Expense:			
Discount on sales		160	13,314
Net profit for the year			$6,396

(c)

JOE HALL
BALANCE SHEET
as at December 31, 1955

Assets

Current			
Cash on hand		$2,750	
Accounts receivable	$6,225		
Notes receivable	2,775		
	$9,000		
Less: Provision for bad debts..	900	8,100	
Merchandise inventory		5,500	
Unexpired insurance		300	
			$ 16,650

Fixed			
Furniture and fixtures	$1,650		
Accumulated depreciation	825	$825	
Buildings	$12,100		
Accumulated depreciation	5,324	6,776	
Land		1,000	8,601
Goodwill			2,000
			$27,251
Liabilities			
Current			
Bank overdraft			$2,550
Accounts payable			1,650
Notes payable			1,005
			$5,205
Capital			
Joe Hall, balance 31 Dec. 1954		$18,500	
Net profit for year		6,396	
		$24,896	
Withdrawals		2,850	
Balance 31 Dec. 1955			$22,046
			$27,251

COMMENT: QUESTION V.

This question was very well handled. The students on the whole showed complete mastery of the requirements in this case.

Topical Index . . .

Cost and Management, Volume XXX
January to December 1956

ACCOUNTANTS

Accountant's Role in a Development Programme, The—W. Joseph Blood, Dec., pp. 409-7.

ACCOUNTING

Designing a System for Property Accounting, John A. Watson, Oct., pp. 350-6.

BUDGETS AND BUDGETING

Budget, Measure of Success, The—V. A. Rydbeck, Jly.-Aug., pp. 269-79.

COST ACCOUNTING

Cost Accounting and Control in Shipbuilding—Richard Lowery, Feb., pp. 49-56.

COST CONTROL

Cost Accounting and Control in Shipbuilding—Richard Lowery, Feb., pp. 49-56.
Cost Control in the Rubber Industry—Dan A. Hackney, March, pp. 86-98.
Report on Techniques Leading to Control and Measurement of Performance, A—Malcolm S. Sutherland, Oct., pp. 334-42.

COST REDUCTION

Cost Reduction—L. A. Stock, Jly.-Aug., pp. 251-61.
Significant Areas for Cost Reduction—B. A. C. Hills, Sept., pp. 298-311.

DIRECT COSTING

Lumber Costs, Direct Vs. Absorption—Frank M. Carter, Feb., pp. 67-72.

FINANCIAL MANAGEMENT

Financial Organization—Leslie G. J. Wong, Apr., pp. 129-33.

FINANCING

Trends in Canadian Corporate Financing Since 1948—J. D. Campbell and W. D. Gainer, Oct., pp. 343-49.

FORECASTING

Business Forecasting—E. F. Stevens, June, pp. 232-8.
Forecasting the Cash Balance—Wm. M. Fischer, Nov., pp. 379-88.

INTEGRATED DATA PROCESSING

Integrated Data Processing—H. S. Brown, Sept., pp. 312-18.

INVESTMENTS

Importance of the Time Factor in Investment Decisions, The—June, pp. 211-23.

INVENTORIES

Semi-Automatic Branch Inventory Replenishment—Harry H. Liebster, Nov., pp. 389-94.

LUMBER

Lumber Costs, Direct Vs. Absorption—Frank M. Carter, Feb., pp. 67-72.

MANAGEMENT

Delegation of Authority and Responsibility—B. A. C. Hills, Nov., pp. 369-78.
Effective Administration, Organization and Management—A. M. Jenkins, Sept., pp. 288-96.
Executive Organization—Croft Brook, March, pp. 107-16.

MANAGEMENT ACCOUNTING

Efficient Management Needs Expense Control—An Exhortation to the Student Members—George Moller, Jan., pp. 26-36.

MANUFACTURING

Manufacturing Organization—W. C. R. Jones, March, pp. 99-106.

COST AND MANAGEMENT

OIL

Depletion Accounting for Oil and Gas Producers—R. B. Vaughters, Dec., pp. 428-34.

ORGANIZATION

Co-Ordination of Plant Operations and Comptroller's Department—R. J. Woxman, May, pp. 173-9.
Executive Organization—Croft Brook, March, pp. 107-16.
Financial Organization—Leslie G. J. Wong, Apr., pp. 129-33.
Manufacturing Organization—W. C. R. Jones, March, pp. 99-106.
Marketing Organization—N. H. Engle, Apr., pp. 135-49.
Organization Analysis, The—H. J. Neufeld, June, pp. 224-31.

PRODUCTION AND PRODUCTION CONTROL

Fringe Wages and Production Costs—Robert E. Seiler, Feb., pp. 59-66.

PROFIT SHARING

Installing a Profit Sharing Plan in Your Company—Wm. D. Welsford, Apr., pp. 151-7.

PUBLIC RELATIONS

Public Relations—J. S. Richardson, Jly.-Aug., pp. 262-8.

RATIOS

Industry-Wide Approach to Financial and Operating Ratios, The—C. B. Taylor, May, pp. 181-89.

REPAIRS AND MAINTENANCE

Plan to Improve Maintenance Costs, A—G. C. E. Baker, Jan., pp. 11-16.

RUBBER COMPANIES AND PRODUCTS

Cost Control in the Rubber Industry—Dan A. Hackney, March, pp. 86-98.

SELLING AND DISTRIBUTION

Marketing Organization—N. H. Engle, Apr., pp. 135-49.
Some Aspects and Applications of Distribution Costing—Andre Parent, Jan., pp. 17-25.

SHIPS AND SHIPPING

Cost Accounting and Control in Shipbuilding—Richard Lowery, Feb., pp. 49-56.

SUPERVISION

Good Supervision and How to Get It—S. D. Flinn, Dec., pp. 418-27.

WAGES

Fringe Wages and Production Costs—Robert E. Seiler, Feb., pp. 59-66.
Guaranteed Annual Wage, The—H. C. Pentland, May, pp. 190-7.